

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 27 April 2000 (27.04.00)	
International application No. PCT/EP99/06246	Applicant's or agent's file reference PD980063
International filing date (day/month/year) 26 August 1999 (26.08.99)	Priority date (day/month/year) 07 September 1998 (07.09.98)
Applicant KEESEN, Heinz-Werner et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

09 March 2000 (09.03.00)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer C. Cupello Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PD980063	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 99/ 06246	International filing date (day/month/year) 26/08/1999	(Earliest) Priority Date (day/month/year) 07/09/1998
Applicant DEUTSCHE THOMSON-BRANDT GMBH et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the International search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the International search was carried out on the basis of a translation of the International application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the International application, the International search was carried out on the basis of the sequence listing:

☐ contained in the International application in written form.

☐ filed together with the International application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the International application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METHOD AND APPARATUS FOR TIMESTAMPING A BITSTREAM TO BE RECORDED

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The part beginning with the words "The streamer(line 6) ..."
and ending in the words "the invention(line11)..." is deleted.
line 11: change "the" into "The"

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 99/06246

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N5/00 G11B27/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 689 507 A (VLOT MARNIX C ET AL) 18 November 1997 (1997-11-18) column 8, line 1-24	1,2,6-8
X	EP 0 710 021 A (HITACHI LTD) 1 May 1996 (1996-05-01) column 11, line 46 -column 16, line 16	1,6,7
X	WO 97 00579 A (DIESS MICHAEL SCOTT ;BLATTER HAROLD (US); BEYERS WILLIAM WESLEY JR) 3 January 1997 (1997-01-03) page 3, line 10 -page 13, line 10	1,6,7
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

13 December 1999

Date of mailing of the international search report

21/12/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mourik, J

INTERNATIONAL SEARCH REPORT

onal Application No

PCT/EP 99/06246

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>SAEIJS R W J J ET AL: "AN EXPERIMENTAL DIGITAL CONSUMER RECORDER FOR MPEG-CODED VIDEO AN EXPERIMENTAL DIGITAL CONSUMER RECORDER FOR MPEG-CODED VIDEO SIGNALS. SIGNALS"</p> <p>IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, vol. 41, no. 3, 1 August 1995 (1995-08-01), pages 651-660 651, XP000539519</p> <p>ISSN: 0098-3063</p> <p>* page 653, left column - page 654, left column: paragraphs 3.1 and 3.2</p>	3,9
X	<p>US 5 579 183 A (SAEIJS RONALD W J J ET AL) 26 November 1996 (1996-11-26) column 4, line 45 -column 5, line 23</p>	3,9
X	<p>EP 0 774 753 A (VICTOR COMPANY OF JAPAN) 21 May 1997 (1997-05-21)</p>	3,9
A	<p>column 12, line 49 -column 22, line 17</p>	1,6,7
X	<p>EP 0 749 244 A (MATSUSHITA ELECTRIC IND CO LTD) 18 December 1996 (1996-12-18) the whole document</p>	4,10,11
A	<p>BANKS D ET AL: "BREAKING OPEN THE SET TOP BOX"</p> <p>PROCEEDINGS OF THE SPIE, vol. 3228, 4 November 1997 (1997-11-04), pages 105-116, XP002064906 the whole document</p>	
A	<p>BLOKS R H J: "The IEEE-1394 high speed serial bus"</p> <p>PHILIPS JOURNAL OF RESEARCH, vol. 50, no. 1, 1 January 1996 (1996-01-01), page 209-216 XP004008212</p> <p>ISSN: 0165-5817 the whole document</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 99/06246

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5689507	A	18-11-1997	EP 0723732 A	31-07-1996
			EP 0717909 A	26-06-1996
			WO 9602098 A	25-01-1996
			WO 9601540 A	18-01-1996
			JP 9502851 T	18-03-1997
			JP 9502854 T	18-03-1997
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			JP 8336131 A	17-12-1996
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			DE 69603366 T	18-11-1999
			EP 0832535 A	01-04-1998
			EP 0832536 A	01-04-1998
			JP 11507755 T	06-07-1999
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			WO 9700580 A	03-01-1997
			US 5841987 A	24-11-1998
US 5579183	A	26-11-1996	AU 692235 B	04-06-1998
			AU 1821895 A	30-10-1995
			AU 688868 B	19-03-1998
			AU 1822095 A	30-10-1995
			AU 701481 B	28-01-1999
			AU 6079498 A	18-06-1998
			BR 9505873 A	29-12-1998
			EP 0702879 A	27-03-1996
			EP 0702877 A	27-03-1996
			EP 0858230 A	12-08-1998
			FI 955887 A	07-12-1995
			HU 73451 A	28-08-1996
			WO 9527977 A	19-10-1995
			WO 9527978 A	19-10-1995
			JP 9505195 T	20-05-1997
			JP 8511413 T	26-11-1996
			PL 311953 A	18-03-1996
			US 5596581 A	21-01-1997
			US 5566174 A	15-10-1996
EP 0774753	A	21-05-1997	JP 9139914 A	27-05-1997
			JP 9186665 A	15-07-1997
			JP 9204738 A	05-08-1997
			CN 1156880 A	13-08-1997
EP 0749244	A	18-12-1996	JP 9009217 A	10-01-1997
			JP 9046376 A	14-02-1997



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ :

H04N 5/00, G11B 27/30

A1

(11) International Publication Number:

WO 00/14952

(43) International Publication Date:

16 March 2000 (16.03.00)

(21) International Application Number: PCT/EP99/06246

(22) International Filing Date: 26 August 1999 (26.08.99)

(30) Priority Data:

98250316.1	7 September 1998 (07.09.98)	EP
99250056.1	2 March 1999 (02.03.99)	EP

(71) Applicant (for all designated States except US):
DEUTSCHE THOMSON-BRANDT GMBH [DE/DE];
Hermann-Schwer-Strasse 3, D-78048 Villingen-Schwenningen (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): KEESEN, Heinz-Werner [DE/DE]; Siemensstrasse 22, D-30173 Hannover (DE). OSTERMANN, Ralf [DE/DE]; Bethlehemstrasse 21, D-30451 Hannover (DE).

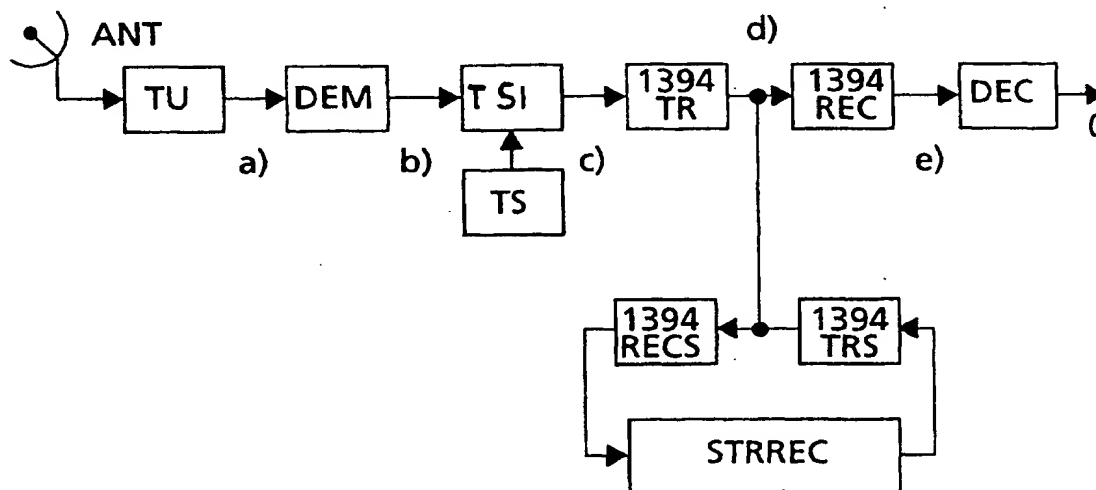
(74) Agent: HARTNACK, Wolfgang; Deutsche Thomson-Brandt GmbH, Licensing & Intellectual Property, Karl-Wiechert-Allee 74, D-30625 Hannover (DE).

(81) Designated States: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

With international search report.

(54) Title: METHOD AND APPARATUS FOR TIMESTAMPING A BITSTREAM TO BE RECORDED



(57) Abstract

A settop box can be connected to a DVD Streamer via an IEEE1394 interface which contains means to timestamp data and to strip off these timestamps again, using them for timing regeneration. The DVD Streamer also must regenerate the timing of data packets as it was upon recording, when these packets are played back. The settop box itself adds timestamps to the data packets before sending them through the IEEE1394 interface. These timestamps pass the IEEE1394 interface unnoticed, i.e. as part of the payload. These timestamps are used when the DVD streamer plays back a stream. The advantage is that there is only one timing/regeneration process involved and that no jitter is accumulated. As an alternative, the stream recorder uses the IEEE1394 timestamps and evaluates them when replaying in order to assign to the data packets the correct temporal position.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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EE	Estonia	LR	Liberia	SG	Singapore		

Claims

1. Method for timestamping a bitstream (A, B, C, D, SI) to be recorded or for using timestamps when replaying from
5 a stream recorder (STRREC), wherein a device (TU, DEM, TS, TSI, DEC) or signal source outputting said bitstream to be recorded adds (TSI) said timestamps (TS) to data packets of said bitstream (A, SI) and wherein the data packets of said bitstream pass to said stream
10 recorder through a network (1394TR, 1394RECS, 1394TRS, 1394REC) which causes network jitter and for which network said timestamps belong to the payload of said data packets, and wherein said timestamps are used when re-
15 playing said data packets from said stream recorder in order to relocate the replayed data packets to the corresponding original temporal position in said bitstream.
2. Method according to claim 1, wherein said network is an
20 IEEE1394 connection or is an Ethernet or is the Internet.
3. Method for timestamping an MPEG bitstream (A, B, C, D, SI) to be recorded or for using timestamps when replay-
25 ing from a stream recorder (STRREC), wherein MPEG timestamps are included in data packets (A, SI) of said MPEG bitstream to be recorded and for the recording additional timestamps generated by said stream recorder become attached to the data packets of said MPEG bit-
30 stream to be recorded, and wherein said additional timestamps are used when replaying said data packets from said stream recorder in order to relocate the replayed data packets to the corresponding original temporal position in said MPEG bitstream.
- 35 4. Method for timestamping a bitstream (A, B, C, D, SI) to be recorded or for using timestamps when replaying from a stream recorder (STRREC), wherein data packets (A,

SI) of said bitstream pass to said stream recorder through a network (1394TR, 1394RECS, 1394TRS, 1394REC) which causes network jitter and which network internally adds network timestamps to data packets of said bitstream in order to reduce said jitter when outputting said data packets, and wherein said stream recorder records said network timestamps and during replay uses said recorded network timestamps in order to relocate the replayed data packets to the corresponding original temporal position in said bitstream.

5. Method according to claim 4, wherein said network is an IEEE1394 connection.
6. Apparatus for timestamping a bitstream (A, B, C, D, SI) to be recorded, including:
 - program selection means (TU, DEM) which provide data packets (A, SI) from said bitstream, the data packets belonging to a specific program;
 - a network interface (1394TR, 1394REC) which provides data of said data packets to a stream recorder or which receives data of said data packets from said stream recorder, wherein the related network causes network jitter and for which network said timestamps belong to the payload of said data packets and wherein said timestamps are used to relocate the replayed data packets to the corresponding original temporal position in said bitstream;
 - means (TS, TSI) for generating timestamps and for adding these timestamps to the data of said data packets, which means provide the output data to said network interface;
 - means (DEC) for decoding replayed data of said data packets received from said network interface.
7. Stream recorder for a bitstream (A, B, C, D, SI), including:
 - a network interface (1394RECS, 1394TRS) which provides

data of data packets (A, SI) of said bitstream including time-stamps, having been inserted outside said network interface, for recording or which receives replayed recorded data, wherein the related network causes network jitter and for which network said time-stamps belong to the payload of said data packets;

- stream recording means (STRREC) which record data of said data packets including said timestamps or which replay data of said data packets, wherein during replay said timestamps are used in order to relocate the replayed data packets to the corresponding original temporal position in said bitstream before the replayed data packets enter said network interface.

8. Apparatus according to claim 6 or 7, wherein said network is an IEEE1394 connection or is an Ethernet or is the Internet.

9. Stream recorder for an MPEG bitstream (A, B, C, D, SI), including:

- a network interface (1394RECS, 1394TRS) which provides data of data packets (A, SI) of said bitstream, said data packets including MPEG timestamps, for recording or which receives replayed recorded data for data packets including said MPEG timestamps;

- stream recording means (STRREC) which record data of said data packets, including said MPEG timestamps, and additional timestamps generated by said stream recording means which become attached to the data packets of said MPEG bitstream to be recorded, or which replay data of said data packets, wherein during said replay said additional timestamps are used in order to relocate the replayed data packets to the corresponding original temporal position in said MPEG bitstream.

35

10. Stream recorder for a bitstream (A, B, C, D, SI), including:

- a network interface (1394RECS, 1394TRS) which provides

data of data packets (A, SI) of said bitstream for recording or which receives replayed recorded data, wherein the related network causes network jitter and which network internally adds network timestamps to data packets of said bitstream in order to reduce said jitter when outputting said data packets;

- stream recording means (STRREC) which record data of said data packets including said network timestamps, or which replay data of said data packets, wherein during replay said recorded network timestamps are used in order to relocate the replayed data packets to the corresponding original temporal position in said bitstream before the replayed data packets enter said network interface.

15

11. Stream recorder according to claim 10, wherein said network is an IEEE1394 connection.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

Hartnack, Wolfgang
DEUTSCHE THOMSON-BRANDT GMBH
Patent- und Lizenzabteilung
Karl-Wiechert-Allee 74
D-30625 Hannover
ALLEMAGNE

THOMSON multimedia
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15. Sep. 2000

Patent Department
Administration-Hannover

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year)

14.09.2000

Applicant's or agent's file reference
PD980063 ✓

IMPORTANT NOTIFICATION

International application No.
PCT/EP99/06246

International filing date (day/month/year)
26/08/1999

Priority date (day/month/year)
07/09/1998

Applicant

DEUTSCHE THOMSON-BRANDT GMBH et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

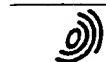
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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Fax: +49 89 2399 - 4465

Authorized officer

SCHALINATUS, D



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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PD980063		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP99/06246	International filing date (day/month/year) 26/08/1999	Priority date (day/month/year) 07/09/1998	
International Patent Classification (IPC) or national classification and IPC H04N5/00			
Applicant DEUTSCHE THOMSON-BRANDT GMBH et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 09/03/2000		Date of completion of this report 14.09.2000	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Brandenburg, J Telephone No. +49 89 2399 8027 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/06246

1. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-16 as originally filed

Claims, No.:

1-6 as received on 03/08/2000 with letter of 03/08/2000

Drawings, sheets:

1/2,2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP99/06246

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-6
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP99/06246

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

- D1: US-A-5 689 507 (VLOT MARNIX C ET AL) 18 November 1997 (1997-11-18)
- D2: EP-A-0 710 021 (HITACHI LTD) 1 May 1996 (1996-05-01)
- D3: WO 97 00579 A (DIESS MICHAEL SCOTT ;BLATTER HAROLD (US); BEYERS WILLIAM WESLEY JR) 3 January 1997 (1997-01-03)
- D4: SAEIJS R W J J ET AL: 'AN EXPERIMENTAL DIGITAL CONSUMER RECORDER FOR MPEG-CODED VIDEO AN EXPERIMENTAL DIGITAL CONSUMER RECORDER FOR MPEG-CODED VIDEO SIGNALS. SIGNALS' IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, vol. 41, no. 3, 1 August 1995 (1995-08-01), pages 651-660 651, XP000539519 ISSN: 0098-3063
- D5: US-A-5 579 183 (SAEIJS RONALD W J J ET AL) 26 November 1996 (1996-11-26)
- D6: EP-A-0 774 753 (VICTOR COMPANY OF JAPAN) 21 May 1997 (1997-05-21)
- D7: EP-A-0 749 244 (MATSUSHITA ELECTRIC IND CO LTD) 18 December 1996 (1996-12-18)

2. The subject-matter claimed in claims 1 and 4 is concerned with recording and replaying MPEG data streams, wherein MPEG timestamps are included in the bitstream.

Apparently, the use of timestamps added to Bitstreams for relocating replayed or received data to corresponding temporal positions in the Bitstream is a well known measure in the prior art.

This measure is known, for example, from D1, cf. column 8, line 1-24, from D2, col. 11, line 46-col. 16, line 16, or from D4, page 653-654, ...

Similar systems using MPEG data streams exist in the prior art, the closest being that of D5. In this system, timing information corresponding to transport packets is included and retrieved to recreate the MPEG information.

There is apparently a difference between the system of D5 and that of the present claims 1 and 5 in that in the claimed method and apparatus internally added network timestamps are added for recording, and these timestamps are used to reduce the network jitter. In other words, further to the MPEG timestamps network related timestamps are added.

There are thus differences between the claimed invention and the closest prior art - that of the D5 - and apparently there is no suggestion in the rest of the cited documents which could lead the skilled person to modify the D5 system so as to arrive at an apparatus/method falling within the terms of the independent claims of this application. It must therefore be concluded that the claimed subject-matter is neither anticipated nor rendered obvious.

3. For the assessment of the present claims 1-6 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. However, since the present claims relate to the technical field of MPEG recording or replaying no reason is apparent that the claimed subject-matter should not be industrially applicable.

Re Item VII

Certain defects in the international application

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D7 is not mentioned in the description, nor are these documents identified therein.

Claims

1. Method for recording or replaying data packets (A, SI) of an MPEG bitstream (A, B, C, D, SI) using a stream recorder (STRREC), wherein MPEG timestamps are included in the MPEG bitstream data packets to be recorded or to be replayed, characterised by:
- when recording, said MPEG bitstream data packets (A, SI) are input to said stream recorder through a network (1394TR, 1394RECS), which network causes network jitter and which network internally adds network timestamps to data packets of said bitstream in order to reduce by evaluating said network timestamps said network jitter when outputting said data packets from said network;
 - timestamps from said network are recorded in said stream recorder together with said MPEG bitstream data packets (A, SI) to be recorded;
 - when replaying said MPEG bitstream data packets (A, SI) from said stream recorder, said recorded network timestamps are used to assign to the replayed MPEG bitstream data packets (A, SI) the correct temporal position as it was upon recording;
 - the replayed and relocated MPEG bitstream data packets (A, SI) pass through said network (1394TRS, 1394REC) causing network jitter, which network again internally adds network timestamps to data packets of said bitstream in order to reduce by evaluating these network timestamps said network jitter when outputting said data packets from said network.
2. Method according to claim 1, wherein said network temporally compresses the input data packets.
3. Method according to claim 1 or 2, wherein said network is

an IEEE1394 connection.

4. Stream recorder (STRREC) for recording or replaying data packets (A, SI) of an MPEG bitstream (A, B, C, D, SI),
5 wherein MPEG timestamps are included in the MPEG bitstream data packets to be recorded or to be replayed, including:
 - a network interface (1394TR, 1394RECS, 1394TRS, 1394REC)
10 through which said MPEG bitstream data packets (A, SI) are input to said stream recorder for recording, and through which said MPEG bitstream data packets replayed from said stream recorder pass again, which network causes network jitter and which network internally adds network timestamps to data packets of said bitstream in
15 order to reduce by evaluating said network timestamps said network jitter when outputting said data packets from said network;
 - stream recording means (STRREC) which record timestamps from said network together with said MPEG bitstream data
20 packets, or which replay said MPEG bitstream data packets, wherein when replaying data of said MPEG bitstream data packets (A, SI) said recorded network timestamps are used to assign to the replayed MPEG bitstream data packets (A, SI) the correct temporal position as it was upon
25 recording.
5. Stream recorder according to claim 4, wherein said network temporally compresses the input data packets.
- 30 6. Stream recorder according to claim 4 or 5, wherein said network is an IEEE1394 connection.